

Plant systematics and taxonomy

V.H. Heywood

Plant Classification. By L. Benson. Second edition. Pp.901. (D.C. Heath and Company: Lexington, Massachusetts and Toronto, 1979.)

In the 22 years that have elapsed since the publication of the first edition of this work, plant systematics and taxonomy have experienced major changes, but these are scarcely reflected in this new edition. It is intended as an elementary textbook "to open up the new world of living plants to college students and the educated public". The author refers readers to his *Plant Taxonomy, Methods and Principles*

(Ronald: New York, 1962, 1978) for an advanced treatise covering the application of cytogenetic and experimental investigations to plant taxonomy.

On the other hand, new information and ideas on the origin and relationships of the major groups of vascular plants other than the flowering plants are taken into account in the appropriate sections of this edition. For the flowering plants, four new systems of classification, namely those of Stebbins, Takhtajan, Cronquist and Thorne, are considered (chapter 16), though not fully accepted; and the author has presented a revised version of his own system, the most conspicuous change being the final abandonment of the Amentiferae as a partly natural, partly artificial group. No mention is made of other recent systems such as those of Dahlgren and Soó. The section of the book devoted to the classification of natural floras, primarily

with reference to North America, has also been revised.

Overall, this new edition of Benson's major work retains the merits and faults of the original. It is too long (nearly 900 pages) and diffuse and covers too many diverse topics for a single work. It is an excellent book to dip into, but is scarcely likely to recommend itself to students outside North America as a textbook of systematics, although it contains a large amount of information that would be useful for various courses. The book is well printed and illustrated, but the binding in my review copy has already come adrift. □

V.H. Heywood is Professor and Head of the Department of Botany, University of Reading, UK, and currently Dean of the Faculty of Science.

Fungal biology

P.E. Long

Biology of the Fungi: Their Development, Regulation and Associations. By Ian K. Ross. Pp.499. (McGraw-Hill: New York and London, 1979.) £11.20.

PROFESSOR ROSS sets out to provide an introductory undergraduate text emphasising developmental and regulatory aspects and has succeeded by presenting, in a conversational style, a lively, questioning and personal account both of the fungi and of the protistan mycetozoa and their allies traditionally studied by mycologists. Some will find, as the author anticipates, that treatments of particular groups or topics offend their susceptibilities but a reasonable balance and wide coverage have been achieved in the three sections that deal with the salient features and developmental pathways of the organisms under consideration; discuss the regulation of their vegetative and reproductive development; and review their associations. The latter, shortest section includes a welcome chapter on viruses in fungi but is really a rather loose mixture, strictly fungal, additionally ranging from their spore liberation and dispersal through saprobic, mutualistic, parasitic and predatory activities to their impact on human affairs.

My initial enthusiasm became tempered by the impression that the survival strategies of the septate higher fungi and their capacity to produce varied multihypal

structures are not sufficiently described. Furthermore the roles of vacuolation and septal pore occlusion in thallus development are neglected as is much experimental work both on conidiation and the cell cycle in yeasts, while hyphal wall architecture and synthesis receive rather cursory attention. To be fair many of these deficiencies can be rectified by diligent use of the extensive bibliography although this remedy is not available for readers of chapters 15 and 16, as, atypically for this up-to-date textbook, few post-1970 books on parasitism or mutualism are cited. Some more generally useful sources are overlooked too, including Ainsworth and Bisby's *Dictionary of the Fungi* (Sixth edition, Commonwealth Mycological Institute, 1971). The figures, mainly in the first section, are good but many lack any indication of scale and some captions are so terse as to be uninformative. Hopefully the appellation 'death cup' that appears under Figure 6.36 will not become perpetuated.

These expressions of vexation denote my exasperation at points which diminished the appeal of a stimulating and attractive book that provides many ideas and much material for a modern course in mycology. The approach is fresh, the arguments enjoyable and some topics are new in a text which will be particularly useful to students who have had some previous exposure to university level cell biology, while also providing food for thought to their instructors. □

P.E. Long is a Lecturer in Mycology in the Department of Botany at the University of Leicester, UK.

Introductory soil science

D.L. Rowell

Introduction to the Principles and Practice of Soil Science. By R.E. White. Pp.198. (Blackwell Scientific: Oxford, 1979.) £8.50.

ALTHOUGH there have been several books published recently which deal with soils from a geographical viewpoint, this is the first book of its kind to appear for many years. It is a valuable attempt to present soil science at an introductory level, and has successfully shown how biology, chemistry and physics are integrated in the study of this part of our environment. It is thoroughly up to date, including for the first time at this level much that has been understood only recently.

The first two sections deal with the principles of soil science and the third part looks at the application of these principles to soil management, primarily from an agricultural point of view. The book is suitable for use in a wide range of courses at universities, technical and agricultural colleges. It assumes O level knowledge of the sciences, but occasionally starts at a higher level — surely a mistake for a book of this sort. Material is presented very effectively in diagrammatic form. The text is sometimes very concise, perhaps making it difficult for the book to be used in isolation from taught courses. □

D.L. Rowell is Lecturer responsible for the teaching of introductory soil science courses in the Department of Soil Science at the University of Reading, UK.